REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 4 and 6 are presently active in this case. The present Amendment amends independent Claims 4 and 6; and cancels Claims 1-3, 5, and 7-8 without introducing any new matter.

In the outstanding Office Action, the abstract of the disclosure was objected to because of informalities. Claims 6-7 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1-3 were rejected under 35 U.S.C. §102(b) as anticipated by Mori et al. ("Industrial Application Experiences of New Type Flow-Metering Systems Based on Ultrasonic-Doppler Flow Velocity-Profile Measurement," Conference Publication of the 3rd International Symposium on Ultrasonic Doppler Methods for Fluid Mechanics and Fluid Engineering, Ecole Polytechnique Fédérale de Lausanne (EPFL), September 2002). Claims 4-5 and 7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Mori, in view of Wunderlich et al. (Th. Wunderlich, P.O. Brunn, *A wall layer correction for ultrasound measurement in tube flow: comparison between theory and experiment*, Flow Measurement and Instrumentation, vol. 11, iss. 2, June 2000, pp. 63-69, hereinafter "Wunderlich".) Claims 4, 6 and 8 were rejected under 35 U.S.C. § 103(a) as unpatentable over Mori, in view of Ghidaoui et al. (M. S. Ghidaoui, A. A. Kolyshkin, *Stability Analysis of Velocity Profiles in Water-Hammer Flows*, Journal of Hydraulic Engineering, Vol. 127, No. 6, June 2001, pp. 499-512, hereinafter "Ghidaoui").

In response to the objection to the Abstract of the Disclosure, the Abstract is herewith amended not to exceed 150 words. The features of the Abstract find support in at least original Claim 1. No new matter has been added.

Moreover, in response to the rejection of independent Claim 6 under 35 U.S.C. § 112,

second paragraph, as being indefinite, Applicants have amended independent Claim 6 to correct some formal issues.

To form this rejection, the pending Office Action relied on M.P.E.P. at § 2173.05(p), that prescribes indefiniteness if an applicant claims both a product *and* a process in the same claim. (Office Action, p. 2, ll. 21-25.) However, this is not the case with Applicants' amended, independent Claim 6. M.P.E.P. § 2173.05(p) explains with some case law what a "product and process in the same claim" is. For example, a claim directed to an automatic transmission workstand and the method of using it was held to be indefinite, because it attempts to incorporate two different independent claims of two different statutory classes into one single claim. *See Ex parte Lyell*, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990). But Applicants' Claim 6 does not claim a device and a method of using the same device, but is directed to a storage medium having a computer program, and the claim body further sets forth different functional descriptive material for the computer program that is stored on the claimed medium. As explained in the M.P.E.P., such claims are common practice for computer-related claims. *See* M.P.E.P. § 2106.01, *and see In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (discussing patentable weight of data structure limitations in the context of a statutory claim to a data structure stored on a computer readable medium that increases computer efficiency). Accordingly, in light of the claim amendments, Applicants respectfully request reconsideration of the rejection under 35 U.S.C. § 112, second paragraph.

Moreover, independent Claim 4 is amended to recite that the step of calculating the position of the inner wall calculates "the inflection point from the fluid velocity distribution." These features find non-limiting support in Applicants' disclosure as originally filed, for example in the specification at page 7, paragraph [0013]. No new matter has been added.

In response to the rejection of Claims 4 and 6 under 35 U.S.C. § 103(a), Applicants

respectfully request reconsideration of these rejections and traverse the rejections, as discussed next.

Briefly summarizing, Applicants' Claim 4 is directed to a method for measuring a flow rate of a fluid using an ultrasonic flowmeter. The flowmeter includes, *inter alia*: an ultrasonic transmitter for launching ultrasonic pulses into the fluid, a flow velocity distribution measuring unit for measuring flow velocity distribution of the fluid, and a flow rate operation unit for calculating a flow rate of the fluid in the measurement region based on the flow velocity distribution. The method for measuring the flow rate comprises the steps of outputting a flow velocity distribution graph displaying the flow velocity in two axes of positions in the inner diameter direction of the fluid pipe relating to the measuring line and fluid velocities corresponding to the inner diameter direction; ***calculating the position of the inner wall with respect to the axis in the inner diameter direction by calculating the inflection point from the fluid velocity distribution***; and calculating the flow rate of the fluid by an integral operation based on the inner wall position calculated at said inner wall position calculation step.

Turning now to the applied reference, Mori is directed to a velocity profile measurement method by using an ultrasonic Doppler method, in contrast to background methods directed to electromagnetic flowmeters. (Mori, Abstract, Fig. 3.) The measurement principle is based on simultaneously measuring multiple points on the line of flow of a velocity profile, and that the line of measurement should be inclined at a certain angle. (Mori, p. 116-117, ¶ 2) In Mori's Figure 8, a measured profile is shown, with lines at 12.574mm and 165.48mm. However, Mori fails to teach a step of calculating the position of the inner wall with respect to the axis in the inner diameter direction ***by calculating its inflection point from the flow velocity distribution***, as required by Applicants' Claim 1. Mori is entirely silent on such a feature, and merely shows lines at two different locations at a displayed

profile. Mori also does not explain how these lines are determined, nor does it explain that an inflection point is used, being a point on a curve at which the curvature changes from convex to concave or vice versa.[1]

The pending Office Action admits that Mori does not teach such a feature. (Office Action, p. 7, ll. 9-12.) However, the Office Action believes that this feature is taught in the reference Ghidaoui, and also contends that the combination of the references Mori and Ghidaoui is proper and obvious. Applicants respectfully disagree with these assertions.

The reference Ghidaoui is directed to a method of analyzing a linear stability of base flow velocity profiles for laminar and turbulent water-hammer flows. (Ghidaoui, Abstract, ll. 1-3.) Moreover, Ghidaoui states in the Abstract that "[t]he presence of inflection points in the base flow velocity profile and the large velocity gradient near the pipe wall are the sources of flow instability." (Ghidaoui, Abstract, ll. 4-5.) However, the mere mention that "inflection points" that are present in a water flow profile, as explained in Ghidaoui, is not sufficient to remedy the deficiencies of Mori. Even if *arguendo* we assume that the combination is proper, both references fail to teach a nexus between wall positions *and* inflection points of flow velocity distribution. Applicants' Claim 1 clearly requires such nexus, because the position of the inner wall is calculated by using the inflection point from the flow velocity distribution.

This feature also cannot be inferred from the references Mori and/or Ghidaoui. A mere position that a reference ***could*** perform a claimed feature is insufficient to form a rejection based on inherency. As discussed above, neither of these references provide the nexus between wall position calculation and the use inflection point from the flow velocity distribution. The U.S.P.T.O. has the burden to show that the alleged inherent characteristic

[1] "inflection point." *Dictionary.com Unabridged (v 1.1)*. Random House, Inc. 28 Aug. 2008. <Dictionary.com http://dictionary.reference.com/browse/inflection point>.

necessarily flows from the teachings of the applied references, and the U.S.P.T.O. has not met that burden. *See* M.P.E.P. § 2112. *See also* same section stating that "[t]he fact that a certain result or characteristic ***may*** occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic," (emphasis in original). *See also In re Robertson*, 49 USPQ2d 1949, 1951 (Fed. Cir. 1999).

Moreover, Applicants also traverse the obviousness rejection of the features of Applicants' independent Claim 4 over the references Mori and Ghidaoui. It appears that the pending Office Action's reasoning for the obviousness of the combination of these two references infers a feature that is clearly missing from both references Mori and Ghidaoui, by asserting:

> It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the inflection point identification process of Mori et al., to include the steps of calculating the exact position of the inflection point in order to eliminate measured data points after the inflection point since they identify turbulent flow/instable flow.

(Office Action, p. 7, ll. 7-20.) It is unclear why data points have to be eliminated to calculate the exact position of the inflection wall point, and how this would help to calculate a wall position, as suggested by the Office Action. First, Mori is silent on how the position of the walls is calculated altogether, and does also not discuss any use of an inflection point. Moreover, Ghidaoui talks about how flow instability of in water hammer flows can be analyzed, and is also totally silent on any calculation of wall positions. (Ghidaoui, Abstract.) However, Applicants' invention explicitly requires (a) to calculate the position of the walls by (b) calculating the inflection point. Therefore, Applicants traverse this reasoning for an obviousness of the combination of Mori and Ghidaoui, because this reasoning appears to be flawed.

Moreover, Applicants' feature of Claim 4 for "calculating the position of the inner wall with respect to the axis in the inner diameter direction by calculating the inflection point

from the fluid velocity distribution" has greatly improved accuracy of flow rate measurements, and has provided unexpected results using a ultrasonic flowmeter, as next discussed.

In background flowrate measurement techniques, as described in the reference Mori, and also discussed in Applicants' specification in the background art section at paragraph [0006] and in Figure 5, the expected inaccuracy variations of flow rate measurements are around 1%. To improve this performance, Applicants have studied the performance and accuracy of the novel method for measuring a flow rate using the inflection point to calculate wall positions, and have compared them to the background measurement methods. In both methods the following data were used as calculation parameters:

Pipe diameter:	52.7 mm
Wall thickness:	3.9 mm
Pipe wall material:	Steel
Transducer angle:	35.12°
Transducer distance to wall:	22 mm
Wedge material:	Acrylic resin
Sound velocity:	1480m/s for water, 5750m/s for steel, 1430m/s for acrylic resin.

By using these parameters, the results of the inner wall position

Position measured conventionally:	68.672 mm
Position measured with features of Claim 4:	69.12 mm

The measurement by using the present invention has greatly improved the measurement position of the true wall position, comparing with background techniques, such as the one described in the reference Mori.

Therefore, even if the combination of Mori and Ghidaoui is assumed to be proper, the cited passages of the combination fails to teach every element of Applicants' Claim 4. Accordingly, Applicants respectfully traverse, and request reconsideration of this rejection based on these references.

Independent Claim 6 recites features that are analogous to the features recited in

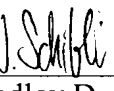
independent Claim 4, but directed to a storage medium. Accordingly, for the reasons stated above for the patentability of Claim 4, Applicants respectfully submit that the rejections of Claim 6 is also believed to be overcome in view of the arguments regarding independent Claim 4.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 4 and 6 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Bradley D. Lytle
Attorney of Record
Registration No. 40,073

Nikolaus P. Schibli, Ph.D.
Registered Patent Agent
Registration No. 56,994

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220

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